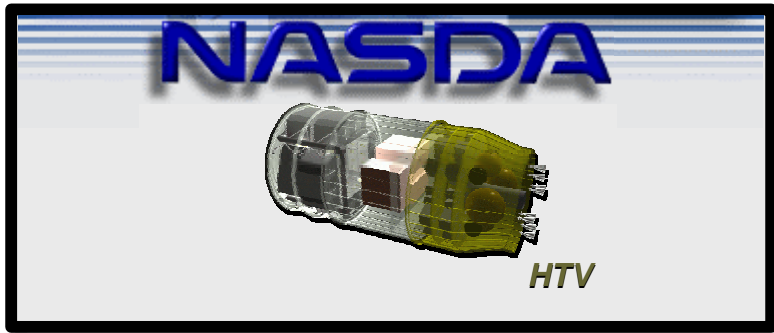




## Automated Transfer Vehicle (ATV) & H-II Transfer Vehicle (HTV) Compatibility Test Overview



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September 18-19, 2002

Network  
Support  
Group



## **Agenda**

- **ATV and HTV Status**
- **ATV and HTV TDRSS Compatibility Test Programs**
- **Documentation**
- **ISS Ground Segment Control Board (GSCB) at Canada**
- **Summary**



## **ATV/HTV Status**

- **ATV**
  - **Current Launch Date: Fall 2004**
  - **Most Recent Project Activity discussed with Networks:**
    - » **ATV Avionics CDR going on now**
    - » **Prox Ops Communication Equipment Testing (antenna polarity)**
- **HTV**
  - **Current Launch Date: Late Summer 2007**
  - **Most Recent Project Activity discussed with Networks:**
    - **Integration of Japanese Space Agencies (National Space Development Agency - NASDA, Institute of Space and Astronautical Science – ISAS, and National Aerospace Laboratory – NAL)**
    - **Area of concentration is on transponder prox link**
    - **TDRSS Compatibility Testing delay**



## **ATV/HTV Compatibility Test Program**

- **Categories and Phases**

- **Categories of Testing**

- **Category 1: Engineering Model Stand Alone Transponder Testing (some additional components)**
    - **Category 2: Qual Model/Flight Model Integrated Avionics**

- **Phases of Testing within the Categories**

- **Phase 1: Quick Engineering Checkout (Category 1 only)**
    - **Phase 2: RF Compatibility Test (STDN No 408.1)**
    - **Phase 3: RF Compatibility Test via TDRS**

- **Preparatory Meetings**

- **Specific meetings (face-to-face and telecons) for compatibility test planning**
  - **Monthly eventually leading to weekly**



## **ATV/HTV TDRSS Compatibility Test Program**

- **ATV**

- **Recent Activities:**

- **Completed the ATV/TDRSS Compatibility Test Results Report**

- **Future Activities: Category 2 Test Planning**

- **HTV**

- **Recent Activities:**

- **Transponder – NASDA contractor is working command bit transition density concerns. In addition, contractor resources are focused on HTV prox link.**
    - **Category 1 Testing October 2003**
    - **Delay of the next Face-to-Face meeting**



## Documentation

- **ATV Compatibility Test Results Report**
  - Final report completed August 2002
  - One item of disagreement between NASA and ESA concerning data stream bit transition density.
    - » The signal provided by the simulator exceeded the maximum number of bits without transition for signal acquisition and was in violation of the TDRSS/ ATV RFICD. For the test, the ATV simulator provided the NRZ-L telemetry to the transponder which  $\frac{1}{2}$  rate convolutionally encoded the signal. The TURFTS was unable to acquire this signal. At 8 Kbps of this maximum zeros telemetry, the TURFTS would remain locked but, the telemetry was not usable.



## **Documentation**

- **HTV Compatibility Test Plan**
  - Draft version of the HTV Compatibility Test Plan was reviewed and comments incorporated June/July 2002
  - NASDA and NASA GSFC now evaluating the current version with respect to other project compatibility test plans to ensure the document contains all necessary data.
  - Expecting the document to be final by the end of calendar year 2002



## **Documentation**

- **RF Interface Control Documents**
  - **ATV RF ICD**
    - **ESA and NASA GSFC not in agreement with content due to results from Compatibility Testing**
  - **HTV RF ICD**
    - **In preparation for TDRSS Compatibility Testing, final comments were provided to NASDA in September 2002**
  - **NASA GSFC Configuration Control Board Submittal**
    - **ATV: Once ESA/NASA GSFC discrepancies are resolved, the document will be ready for CCB processing**
    - **HTV: NASDA is incorporating additional GSFC comments. Document will be ready for CCB prior to end of calendar year 2002**



## **ISS Ground Segment Control Board in Canada**

- **NACAIT discussions during the GSCB**
  - **ATV Category 1 & 2 Testing**
    - **General summary of Cat 1 testing stated - successful**
    - **Current plan for Cat 2 testing in Europe discussed**
    - **Schedules for the ESA/JSC Gateway and development of ATVCC noted**
    - **General tracking of associated schedules to determine if operational interfaces will be available during Cat 2 for preliminary checkout during compatibility test activities**
    - **ESA interested in comparing schedules in Fall 2002 to see how schedules are progressing and to see if the schedules converge for key organization to participate**
  - **HTV Category 1 Testing planning at GSFC**
    - **Cat 1 Test Planning explained**



## **Summary**

- **In Summary:**
  - **ATV and HTV Test activities are continuing to evolve**
  - **The GSFC Team will Continue to Work Closely with JSC and our International Partners**
- **The GSFC Visiting Vehicle Website**
  - **<http://idm.honeywell-tsi.com/visitingvehicle/>**